

Among 150 (14.5%) patients who died during hospitalization, 102(68.0%) patients have used HES. and 105 (70.0%) patients were males. Multivariate logistic regression suggested that patients who ever used HES were associated with higher risk of mortality (adjusted odds ratio, AOR: 1.60; 95%CI: 1.04-2.45) even after adjusting for IHD (AOR: 1.64; 95%CI: 0.98-2.74), CRF (AOR: 4.28; 95%CI: 2.35-7.79), high blood glucose (AOR: 2.85; 95%CI: 1.83-4.45), AKI during hospitalization (AOR: 4.30; 95%CI: 2.79-6.62). **CONCLUSIONS:** Use of HES may be independently associated with higher risk of death in ICU patients with diabetes. However, further studies are required to demonstrate the causation of HES and hospitalized mortality.

DIABETES/ENDOCRINE DISORDERS – Cost Studies

PDB13

BUDGET IMPACT ANALYSIS OF BIPHASIC INSULIN ASPART IN THE TREATMENT OF TYPE 2 DIABETES MELLITUS IN MALAYSIA: A PUBLIC PAYER PERSPECTIVE

Tan SC¹, Matzen P², Yeo LN²

¹IMS Asia Pacific, Singapore, ²Novo Nordisk Pharma Malaysia, Kuala Lumpur, Malaysia

OBJECTIVES: Budget impact analysis (BIA) is a useful tool for reimbursement decision-makers in health technology assessments by authorities across different countries. This study aimed to evaluate the financial impact from the Ministry of Health (MOH) perspective of different adoption rates of Biphasic Insulin Aspart (BIAsp) versus Biphasic Human Insulin (BHI) in treating type 2 diabetes mellitus. **METHODS:** An Excel based 5-year budget impact model was built to estimate insulin treated patients by public providers using local prevalence data. The published demographic, efficacy and adverse event data for ASEAN subgroup analyses of A_{1c}chieve study was applied. Both insulin acquisition costs and other medical costs for complications e.g. major hypoglycaemia, myocardial infarction, stroke, end-stage renal disease, blindness and amputation were included at a discount rate of 3%. The incidence rates of these complications were derived from the established UKPDS equations. The adoption rates were assumed and projected from the 2013 utilisation volume data of BIAsp and BHI by public providers. Sensitivity analyses were conducted. **RESULTS:** The adoption rates of BIAsp were assumed to increase from 1.8% in 2013 to 4.5% or 6.9% in 2018 for base case and upside scenario, respectively. Compared to the base case, upside scenario of wider BIAsp adoption was associated with an increased insulin cost up to RM 8.2M which was offset by avoided complication costs resulting in an overall net budget saving of approximately RM 5.5M over 5 years, primarily driven by estimated reduction in major hypoglycaemia events for patients treated with BIAsp. **CONCLUSIONS:** The higher and wider adoption of BIAsp would likely be associated with cost savings in Malaysia from the MOH perspective attributed to its superiority in H1Ac reduction and lower major hypoglycemia risk in comparison to BHI. More cost saving would be concluded if productivity loss is included from a societal perspective.

PDB14

BUDGET IMPACT ANALYSIS OF U100 INSULIN IN EGYPTIAN DIABETIC PATIENTS

Metry ABS, ElSisiGHAE, AbouRawash AS, Eldesouky R

Central Administration for Pharmaceutical Affairs, Cairo, Egypt

OBJECTIVES: To estimate the budget impact of switching to U100 insulin (100 units [U]/ml) in Egyptian diabetic patients over a time horizon of 5 years. **METHODS:** Pharmacy and medical budget impacts were estimated over the first 5 years of U100 insulin use in diabetic patients from the Egyptian health care system's perspective. Local epidemiology data were used to estimate target population size. Pre-U100 insulin entry treatment option included U40 insulin (40 units [U]/ml). Pre- and post-U100 insulin entry market shares were estimated based on market research and assumptions. Direct medical costs were derived from the Ministry of Health tender list. All costs were reported in Egyptian pounds of the financial year 2014. Deterministic sensitivity analysis was conducted. **RESULTS:** In a hypothetical 85,294,388-member plan, 1,234,380 patients were expected to be candidates for U100 insulin treatment in type I and type II diabetes. The total budget impact after 5 years post-U100 insulin was EGP -0.049 per member per month [PMPM] (pharmacy budget: EGP -0.047 PMPM; medical budget: EGP -0.002 PMPM), assuming 53.59% of the target population would switch to U100 insulin. Sensitivity analyses determined that the cost of U40 insulin and U100 insulin had the potential to impact the base case analysis. **CONCLUSIONS:** The total budget for diabetes following U100 insulin use were cost-saving in comparison to U40 insulin. Conversion to U100 insulin would result in lower overall treatment costs in patients with diabetes from the health care system's perspective. An intensive information campaign providing detailed advice for patients, physicians and pharmacists is essential for the prevention of medication errors and reduction of overall costs.

PDB15

BUDGET IMPACT ANALYSIS OF WIDER ADOPTION OF BIPHASIC INSULIN ASPART (BIASP) IN THE TREATMENT OF TYPE 2 DIABETES MELLITUS (T2DM): A PERSPECTIVE OF PATIENTS TREATED BY PUBLIC PROVIDERS IN SINGAPORE

Tan SC¹, Matzen P², Khoo SP³

¹IMS Asia Pacific, Singapore, ²Novo Nordisk Pharma Malaysia, Kuala Lumpur, Malaysia, ³Novo Nordisk Pharma Singapore, Singapore

OBJECTIVES: Economic evaluations of BIAsp have been published in the context of different countries. This study aimed to evaluate the financial impact from a perspective of patients treated by public providers of different adoption rates of Biphasic Insulin Aspart (BIAsp; NovoMix 30 FlexPen®) versus Biphasic Human Insulin (BHI; Mixtard Penfill®) in treating T2DM. **METHODS:** An Excel based 5-year budget impact model was built to estimate insulin treated patients by public providers using the local prevalence data. The published demographic, efficacy and adverse event data for ASEAN subgroup analyses of A_{1c}chieve study was applied. Both insulin acquisition costs and medical costs for major hypoglycaemia and other complications were applied with a 3% discount rate to the estimated corresponding incidence rates derived from the UKPDS equations. The projected adoption rates

were based on the 2013 utilisation volume data. Other local specific considerations e.g. subsidized selling prices and co-payments were included in the analyses for an assumed size of eligible patients. Sensitivity analyses were conducted. **RESULTS:** The adoption rates of BIAsp were assumed to increase from 23.6% in 2013 to 30% or 36.5% in 2018 for base case and upside scenario, respectively. In comparison to base case scenario, increases in adoption rate of BIAsp were associated with a cumulative increase up to slightly greater than S\$ 2.02M in insulin acquisition cost but a potential cumulative net saving up to approximately S\$0.92M in overall total costs over 5 years, attributing to subsidized selling price of BIAsp assuming it is included standard drug list and its significantly lower major hypoglycaemia risk, respectively. Cost savings were predicted for other complications. **CONCLUSIONS:** The wider adoption of BIAsp was predicted to result in net cost savings from patient perspective in Singapore. More cost saving would be estimated in analyses with reduced productivity loss from a societal perspective.

PDB16

HEALTH CARE UTILIZATIONS AND COSTS OF INSULIN PATIENT-DRIVEN TITRATION VERSUS PHYSICIAN-DRIVEN TITRATION: EVIDENCE BASED ON A CLINICAL TRIAL OF BIPHASIC INSULIN ASPART 30 TWICE DAILY IN PEOPLE WITH TYPE 2 DIABETES IN CHINA

Yang J¹, Liu K², Liu J³, Zhang Y⁴, Song S⁵

¹Beijing Tongren Hospital, Capital Medical University, Beijing, China, ²The Third Hospital of Hebei

Medical University, Shijiazhuang, China, ³Jiangxi Provincial People's Hospital, Nanchang, China,

⁴Novonordisk(China) Pharmaceuticals, Ltd., Beijing, China, ⁵Yantai Affiliated Hospital of Binzhou

Medical University, Yantai, China

OBJECTIVES: Patient-driven titration has been proven as efficacious and safe as physician-driven titration of Biphasic Insulin Aspart 30 (BIAsp 30) in people with type 2 diabetes (T2DM) in China in the 20-week trial (ClinicalTrials.gov identifier: NCT01618214). This study was to further compare titration-related health care utilizations and costs associated with BIAsp 30 self-driven versus physician-driven titration in China based on this trial. **METHODS:** 344 eligible premixed/self-mixed human insulin users with T2DM were randomly assigned to BIAsp 30 twice daily either with self-driven or physician-driven titration. Mean number of self-measured plasma glucose (SMPG), clinical visits and phone contacts with health care practitioners (HCPs) due to insulin-titration were recorded in the trial and used to evaluate health care utilization. Costs were calculated from a societal perspective, including: 1) direct medical costs, multiplying utilizations in the trial and unit cost reported in the literature; 2) direct non-medical costs as transportation fees from previous studies; and 3) indirect costs estimated by human capital approach. **RESULTS:** During the 20-week trial period, health care utilization associated with self-driven titration was lower than that with physician-driven titration (mean number of SMPG was 147.15 versus 151.31 (P=0.5178), outpatient visits was 5.69 versus 8.86 (P<0.001), calls was 5.94 versus 5.98 (P=0.1956), and there were no titration-related hospitalizations in both groups). Average total titration-related costs were CNY 424.93 lower in self-driven group than in physician-driven group (total cost was CNY 1654.14 versus CNY 2079.07; direct medical cost was CNY 1151.31 versus CNY 1329.06; transportation cost was CNY 360.61 versus CNY 537.88; and indirect cost was CNY 142.22 versus CNY 212.13). **CONCLUSIONS:** Self-driven titration of BIAsp 30 was associated with less health care utilization and lower costs compared to physician-driven titration in people with T2DM in China. The new evidence suggests that a more patient-focused approach towards diabetes management may be cost-saving and improve overall efficiency.

PDB17

ECONOMIC BURDEN OF TYPE 2 DIABETES MELLITUS FOR COSTA RICA

Soto Molina H¹, Díaz Martínez JP², RamírezRamírez MA³, Escobar Juárez Y², Pizarro Castellanos M⁴

¹Universidad Autónoma Metropolitana, Mexico City, Mexico, ²HS Estudios Farmacoeconómicos, Mexico City, Mexico, ³Novo Nordisk CLAT, Mexico City, Mexico, ⁴Hospital Infantil Federico Gomez, Distrito Federal, Mexico

OBJECTIVES: To perform a partial economic evaluation of Type 2 Diabetes Mellitus (DM2) as well as its micro and macrovascular complications from the institutional point of view. (Social Security Costarrican Register (CCSR)), for the year 2013. **METHODS:** A partial economic evaluation evaluation analysis was used to analyse the average annual cost for DM2 in costarrican patients. The analysis pays special attention related to the sickness (cardiovascular, renal, microvascular, ophthalmic complications and acute events). Costarrican literature was reviews to obtain costs for DM2 as for its complications, also clinical practice guides for the use of resources were used and finally, this information was validated with specialist physicians from Costa Rica. Only direct medical costs were used, such as: medications, laboratory and additional studies, medical consults, hospitalizations and material; these were obtained from the Cost Model 2013 of the CCSR such as the Statistical Annual Yearbook. To prove the strength of the analysis, deterministic and probabilistic sensitivity tests were performed. **RESULTS:** The average annual cost for DM2 for the year 2013 in Costa Rica was USD \$1,466.17. The macro and microvascular complications related to DM2 were more expensive in 2013 for Costa Rica were the following: USD \$105,865.80 for haemodialysis during the first year, USD \$21,600.40 for chronic cardiac failure during the first year, USD \$15,414.40 for acute myocardial infarction and USD \$15,025.39 for amputation. An average, hospitalizations represented a 27% of the resources used for treatment of complications. The sensitivity analysis proved the strength of the costs. **CONCLUSIONS:** Despite the lack of information in the literature, this article is the first approximation of costs on DM2 and its complications in Costa Rica for the year 2013.

PDB18

MEDICAL EXPENDITURE FOR PEOPLE WITH DIABETES IN URBAN EMPLOYEE BASIC MEDICAL INSURANCE FOR HEBEI PROVINCIAL INSTITUTES

Liu S¹, Zhang P¹, Ma S¹, Yu L², Liu Y¹, Du B¹

¹Medical Insurance Administration Centre of Hebei, Shijiazhuang, China, ²Hebei Medical Insurance Association, Shijiazhuang, China